

# 12-Month-Olds Detect Changes to Goal-Objects in Action

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during familiarization and test videos, but only the test videos included the subsequent change.

## Introduction

The ability to analyze continuous human action is a core achievement of early development. The skill lays the foundation for reasoning about the goals and intentions of others and may therefore be central to the development of a theory mind. One question concerns the origins of such skills. It is possible that infants' knowledge of events guides their attention to objects that are relevant for an interpretation of others' goals. If infants are familiar with a goal-directed action (e.g., reaching) they may selectively attend to the goal-object associated with the action. A prediction arising from this possibility is that they will be more likely to detect goal-relevant than goal-irrelevant changes inserted into human action sequences.

## Procedure

To investigate this prediction, 6- and 12-month-old infants were shown videos of a woman interacting with two objects (a yellow glass and a blue bowl). She was in continuous motion as she directed a goal-directed action (reaching that terminated in her grasping the object) toward one object (e.g., the glass) and a non-goal directed action (a back of the hand motion that terminated in her touching the object) toward the other (e.g., the bowl). To give infants an opportunity to process the event, they were exposed to it repeatedly over 4 familiarization trials. Following this, they were presented with two kinds of test trials: goal change and non-goal change. During the goal change test trials a change was made to the object of the goal-directed action (e.g., the glass flipped upside down) and during the non-goal change test trial a change was made to the object of the non-goal directed action (e.g., the bowl flipped upside down). To mask the perceptual transient that would normally signal a change, a brief blank screen (4 frames) was inserted prior to the change. The blank screen occurred in the same place

## Results and Discussion

The main question was whether infants looked longer at the goal-change than non-goal change trials. If they did this would indicate that they were more sensitive to the change in the goal-relevant objects. Infants at 12 months did so—they looked significantly longer at the goal change test trials than at the non-goal change test trials (paired-*t* test (15) = 3.04, *p* = .008). Infants at 6 months did not. They looked equally long at the goal change and non-goal change test trials (paired-*t* (15) = .58, *n.s.*). See Figure 1.

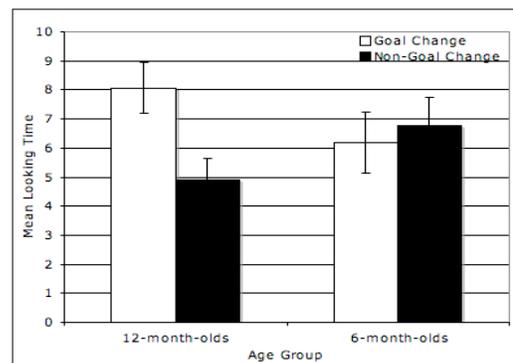


Figure 1: Mean looking times (+ SE) to goal change and non-goal change test trials.

Together these findings suggest that 12-month-olds revealed greater detection of goal-relevant than to goal-irrelevant changes. This finding is consistent with the prediction that a knowledge-driven analysis will lead to greater attention to goal-relevant features of events and provides evidence for a robust ability to detect goal-relevant changes—the action sequences were continuous and contained two different types of action on objects that were perceptually quite similar.